

Christopher Hearty  
Drift Chamber Safety Officer  
October 2, 2000

W. Innes, Chairman  
Hazardous Experimental Equipment Committee

F. O'Neill  
BaBar Safety Officer

H. Lynch  
BaBar Safety Physicist

*Re: Modification to the BaBar Drift Chamber Safety System*

Dear Walt Innes, Frank O'Neill and Harvey Lynch;

I am writing to notify you and HEEC of a minor modification to the BaBar safety system. The modification concerns the monitoring of the flow of nitrogen gas through the bulkheads of the BaBar drift chamber.

The bulkhead regions are enclosed volumes that are flushed with Nitrogen to ensure that a flammable concentration of isobutane will not accumulate. The presence of the flows is an input to the gas system alarm handler (the nanoautomate). The original implementation was to verify the flow by monitoring the pressure in the bulkhead. However, we were unable to obtain a reliable system due to the low pressures involved.

We have now replaced the pressure sensors with flow switches on the flush gas lines leading to the bulkheads. These directly measure the quantity we are interested in and are much more robust than the original design. They are shown as FLM-8 and FLM-9 on the gas system drawing:

[http://www.slac.stanford.edu/BFROOT/www/Detector/CentralTracker/safety/gas\\_system\\_drawing.pdf](http://www.slac.stanford.edu/BFROOT/www/Detector/CentralTracker/safety/gas_system_drawing.pdf)

The flow switches provide a closed contact under normal operating conditions and an open contact if the flow drops below 10 liters per minute. The correct functioning of the system was verified when the flow switches were installed in August 2000. These switches are included in the "Gas System Alarm Checklist", which is used annually to verify the correct functioning of the entire safety system.

Note that the flow switches are a direct substitute for the pressure switches in terms of the logic of the system. The nanoautomate programming required no modifications.

Please let me know if you have any questions concerning this change.

Yours Sincerely,

Christopher Hearty